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| Remarks: This second chapter in the book by RAO seems to offer useful background and guidelines for the kind of research we ought to start focusing on when and if we obtain the kind of validation we are seeking in the current project.  | | | | | |


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Rao, K. R.
Experimental Parapsychology:
A Review and Interpretation
Springfield, Ill. Charles C
Thomas, Publisher 1965

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 Very interesting - should help define what experiments should be done & how to identify "para normals"

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Chapter 2

THE SUBJECT IN PSI TESTS

The Psi Triangle

IN A figurative sense, the experimental situation of psi seems to be basically triangular—the three angles being the subject, the experimenter, and the target. The analogy of the triangle is used simply as a convenient device for the categorization of the psi factors and consequently has no validity besides its usefulness as a descriptive phrase.

For the purpose of this study, the subject angle consists of those studies that are concerned with ascertaining the physical and mental states, inherited or acquired, transient or stable, that are associated with the significant success or failure of subjects in ESP tests. These include the studies relating to the personality and physiological correlates of psi, the effect of the subject's attitudes on his performance, hypnotic and relaxed states of the subject, and the general observations on the subject's health, age, sex, intelligence, etc.

The target angle involves those studies that are relevant to the role of targets in psi tests. It includes studies involving target variations aimed at discovering what types of targets are most suited for psi tests. There are several studies relating to the physical and psychological aspects of the targets. The agent in a telepathy or a GESP test becomes a part of the target angle insofar as he is the target person. Furthermore, the studies in target conditions, such as those concerned with the effect of space and time on the performance of psi subjects, are also included in the target angle.

The experimenter angle is concerned with the role of the experimenter—his moods, attitudes, and abilities that are essen-

tial to elicit psi as well as his methods, designs, and experimental conditions. This angle also includes comparative studies of the experimental methods and test conditions. While the experimenter is independent of his methods and the methods involve the whole complex of the testing situation, the convenience of categorization leads us to the inclusion of methods in the experimenter angle.

There are other studies involving the interrelations between these three factors which may be described as the three lines joining the psi angles. The subject-target line is the one concerned with the subject-target relationship—the attitude of subjects to targets, the dual aspect target situations, and the attitude of the subject toward the agent in GESP and telepathy tests. The subject-experimenter line is concerned with the interpersonal relationships between the subject and the experimenter and with the reactions of the subject to the experimental conditions. The teacher-pupil attitude studies are along this line. Finally, the experimenter-target line deals with such studies as the suitability of particular types of targets in particular situations and with the experimenter's attitudes towards different targets. It is recognized that these lines are arbitrary and may overlap occasionally since some of these relations, such as those which include the method, may have all around implications involving all the angles.

The subject is obviously the most important angle of the psi triangle. The search for gifted subjects has always been an important concern of the inquiring parapsychologist. The studies concerning the personality correlates of ESP, the attitudes of the subject conducive to psi manifestation, and the mental and physical states of the subject constitute a major portion of published literature in the field. Is psi an individual gift or a generic one? What kinds of people are the most successful subjects? Do the health, age, and sex of the subject have any effect on psi? Are there any personality characteristics or patterns that are particularly associated with psi functioning? Do the attitudes of subjects toward psi help or hinder it? Are there any natural or induced states of mind that are helpful to psi? Are there any physiological states that are related to the parapsychical phenomena? These are some of the questions that are raised, if not

answered, by the studies in the field. We shall consider briefly a summary of some of the important findings regarding these questions and their general implications for the understanding of the nature of psi.

Is Psi Generic?

Do all human beings have psi, or is it a special gift of a few? It has been a popular hypothesis, at least since Bergson (40), that psi is a species characteristic that is being progressively repressed in the process of evolution. But earlier experimenters were usually looking for gifted subjects, mostly because they did not have methods for mass testing. Among modern experimenters, Soal is one of the few who hold that psi ability is a gift possessed by only a few. He literally tested scores of subjects in his search for a gifted subject before he found Basil Shackleton and Gloria Stewart. If we weigh the total evidence, however, it seems to favor the hypothesis that all human beings (perhaps some animals too) have psi ability although not everyone who takes an ESP test obtains more hits than expected by chance to give evidence of his ability. Some of the most successful experiments, such as the Pratt-Woodruff series (761) were done with a large group of unselected subjects. Nearly all the experimental reports published in the *Journal of Parapsychology*, in 1964, were with unselected subjects. As Murphy says,

The evidence has finally driven us directly into the view that we are concerned with generic, and not simply with individual gifts. Much depends on the subtlety of the method, and the devices that we use for reinforcing and bringing to maximal expression whatever primitive and half-choked functions may be waiting for our detection and cultivation (597, p. 5).

Some Outstanding Subjects

The assumption that psi is generic does not imply that subject A in an experiment will be as good as subject Z. As in any other human ability, there may be great individual differences in psi; therefore, the study of those persons who happen to be good subjects and the optimum conditions under which they are most successful is necessary.

The first question that arises, then, is the question of whether the people who report unusual spontaneous psychic experiences show any common characteristics, mental or physical, which may indicate a possible connection with psi ability. Unfortunately, there is no evidence that they do. Psychic experiences seem to occur to all kinds of people. Louisa E. Rhine reports, "In considering a large group of people like those who have reported the experiences in the preceding pages, the most obvious observation is that they do not, rather than do, show similar characteristics" (899, p. 178).

Do the outstanding subjects tested in various psi experiments share any common dispositions? Unfortunately, the published experimental reports do not often involve an assessment of the subjects. Even when they do, there is the possibility that they note only those characteristics which the experimenter prejudices to be associated with psi and ignore those which may not seem to have meaningful significance at the time of the study. For these reasons, our summary of what we know of some of the outstanding subjects is necessarily scanty and anecdotal and is, at best, only of suggestive value in pointing out possible future explorations.

Stuart, Pearce, Linzmayer, and the five other major subjects of J. B. Rhine, we are told, were sociable, normal, intelligent, and artistic. All but Linzmayer, who was not especially religious, were quite religious without being orthodox. Stuart was more positively suggestible than Linzmayer, who was only slightly hypnotizable and was somewhat negatively suggestible in his relaxed condition. One common characteristic in all these cases is that each subject reported a near relative who had had psychic experiences, even though none of them seemed to claim any for himself. Linzmayer's mother had premonitory experiences; Stuart's mother and aunt had veridical psychic experiences, and Pearce's mother was reportedly a clairvoyant (835).

Basil Shackleton, Soal's highly successful subject, was a photographer. According to Soal, he was expansive, talkative, and sociable. Unlike Rhine's subjects, Shackleton "had on various occasions applied his faculty of intuition to the forecasting of winners in horse races," but he had no relatives who seemed to

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possess such psi abilities (1065).

Tyrell noted that his best subject, Miss Johnson, had "a well-balanced mind and strong common sense." She also possessed a general faculty which may be called intuitive or extrasensory that seemed to operate in her daily life.

Mrs. Upton Sinclair reported many psychic experiences and always said, according to her husband, that she got "the feelings of people, not by their words, but by intuition" (1039, p. 16).

Maria, the unsophisticated peasant girl studied by Langdon-Davis, "was healthy, cheerful, reliable" but not unintelligent (119, p. 112).

According to Riess, his brilliant subject, Miss S., was "a young lady of high intelligence and limited interests. She was obviously not well adjusted to her life in the community and on several occasions stated that she was 'sick of living at home'" (915, p. 262).

Miss J. K., the first of Ryzl's star subjects, is "very intelligent, ambitious and careful in her work . . . Her interests are divided between her desire to study medicine . . . and her love for music . . . Of other characteristics, we could mention somewhat hysteroidal features of personality manifesting themselves from time to time in periodically unbalanced states of feelings, in a vegetative instability, in capriciousness and a somewhat affected behavior" (960, p. 245).

The subject Bo, an unusually good subject studied by Drake, was both mentally and physically retarded. "The personality of the child might be characterized by irrelevant, distractible, and hyperactive extroversion" (156, p. 185). He showed no special artistic abilities.

Lillian was a normally intelligent child of nine years when she scored perfectly on all twenty-five cards (814).

According to the psychologist who administered Rorschach tests to them, the Jones boys studied by Soal had the same intelligence quotient of 110. Glyn was well adapted to his social environment, while Ieaun was "introverted and out-of-touch with reality" (1066, p. 19). But Soal does not think that the psychologist's assessment of Ieaun is correct. He says, "If Ieaun was ever 'introverted' or neurotic, he seems to have grown out of it"

(1066, p. 20).

Thus, the list of outstanding subjects includes children as well as adults, highly intelligent subjects and the mentally retarded, some well adjusted and others not so well adjusted. There are three characteristics, however, which seem to be relatively common among the outstanding subjects. First, the subjects either believed from their daily experiences that they had these abilities, or they had known someone in their families who was believed to have had psi experiences. This does not, however, warrant the conclusion that psi is hereditary—Shackleton did not have any relatives who had had psi experiences. In the case of other outstanding subjects, it is not unreasonable to assume that the fact that they had these experiences or that they had known someone close who had had them created a favorable attitude in the subjects themselves which may in turn have helped them respond favorably to the experimental situation.

Second, the artistic characteristic seems to be another fairly common feature. Rhine noted this characteristic among all his major subjects. Shackleton was an artist by profession. After leaving her academic environment, Miss S. "occupied herself with music, giving lessons and attending concerts" (915, p. 261). Miss J. K. was much interested in music and was an accomplished pianist. We could, of course, draw no conclusion from these few cases. No experiments were done to test whether artistic ability or interest is in any way correlated with psi. It remains an interesting possibility for exploration.

Third, several of these outstanding subjects seem to be sociable or extroverted. Rhine's subjects were sociable. We are told that Shackleton, too, was talkative and sociable. The Jones boys, according to Soal, were also extroverts; and Bo was a hyperactive extrovert. As we shall see later, there is also some experimental evidence to suggest that extroverts are likely to obtain better positive scores than introverts.

The Effects of Health, Age, and Sex

Reported observations on the relevance of the health of the subjects to their ESP scores vary considerably. The Colorado experiments of Martin and Strick suggest "possible correlation

between scoring success and physical fitness" (555, p. 160). Tyrell reported that Miss Johnson's scores fell sharply when she had a succession of colds. Thouless (1139) observed that he had not scored well when he was ill. Rhine (835) noted in his monograph that physical disease hindered ESP. But in his work with Shackleton, Soal found "no reason to connect failure with ill health" (1065, p. 185). Miss S. was not a well person and was "compelled to leave her academic environment because of ill health" (915, p. 262). Rivers (919) failed to find any meaningful correlation between ESP success and mental health in an experiment which gave her statistically significant results. Zorab (1249) and West (1206) failed to get any significant results with their psychotic subjects.

In her study of patients suffering from cerebral concussions, Schneider (1012) found that these subjects scored significantly better in an ESP test than would be expected by chance; while the control group (consisting of those who had fractures from accidents and those who recovered from cerebral concussion and were discharged on the day of the ESP test) did not. Schneider herself tends to give a psychological interpretation to her findings. Based on the observation of the behavior of the patients and their Rorschach protocols, Schneider and McConnell suggest that the high scores of the patients may be a result of "their less active orientation toward their physical environment and their willingness to accept passively the impressions (including ESP impressions) that came to them" (1017, p. 84).

From these varying observations, it appears that the health of the subject is not directly related to his psi ability. In some cases, illness may adversely affect the performance of subjects. It may disturb the subject sufficiently to distract him from his task and consequently lower the scoring level. The state of health may thus be a psychological factor rather than a physiological one, working on the subject's motivation and his attitude toward the task.

We have observed from the few cases of high-scoring subjects that age is not a factor affecting psi. Mrs. Sinclair was "somewhere around forty-five years old" when she did her experiments with her husband, but Maria was sixteen and Lillian was only nine

when they were tested. From her large collection of spontaneous cases, Louisa E. Rhine observes that "many children have psi experiences, as do also many of the aged" (899, p. 148). Experimental studies also seem to confirm this observation; psi experiments were successfully carried out with pre-school children (515), school children (1169), college students (358), adults, and aged persons.

In a PK experiment, Nash (626) found that the run score average of his two oldest subjects (forty and forty-four years) was significantly higher than the run score average for the seven younger subjects who were between fifteen and twenty-two years of age. Nash did not, however, consider that the PK ability was linked in any way with the age of the subject, since his sample was not large enough and the differences in score might have been caused by other individual influences.

While there is no single age group especially suitable for psi, age may enter as a factor into the experimental situation because the techniques of testing should take into account the age level of the potential subjects. The test needs to be interesting to the subject, and the interests of subjects change with age. For example, van Busschbach (1167), using the same test, obtained significant results with primary school children but about chance results with secondary school pupils.

In a precognition experiment, Rhine (833) observed that the children in his test obtained positive scores, while the adults scored fewer hits than expected by chance. Rhine did not, however, attribute the significant difference to their age but to their attitudes about the possibility of precognition and to their readiness to accept it.

Another possible effect of age on the manifestation of psi is illustrated in an experimental study by Rao (798). Rao tested in pairs a group of college students and a group of junior high school students in a competitive situation where each of the pair (both from the same group) was motivated to defeat his opponent. Rao observed that the responses of his two groups to the competitive situation were significantly different. While the subjects from the junior high school showed a significant tendency to compete by scoring in opposite directions, the college students

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seemed to *comply* with each other by scoring in the same direction.

In other tests involving the use of small monetary rewards (834), it was observed that children responded favorably while the adults did not, thus suggesting again that the behavioral patterns associated with age, interest, and maturity may affect the psi performance even if age has no direct relevance to psi.

Sex, like age, does not seem to have direct relation to psi, notwithstanding the reputation of women for being intuitive. Successful subjects are divided equally between the sexes. Reporting that in her collection women having psi experiences outnumber men ten to one, L. E. Rhine concedes the possibility that this "difference might be the result of such superficial causes as women being more communicative, less inhibited on this topic than men" (899, p. 132). There are, however, some experiments in which girls are reported to have obtained better scores than boys. L. E. Rhine (899) herself, working with children between five and ten years of age, found that the average score of girls was better than that of boys.

Van Busschbach (1169) in his tests with first and second-grade pupils, found that girls did significantly better than boys. In her GESP experiments with nursery school children in the Netherlands, Louwerens (515) obtained highly significant results with girls alone; and the difference between the ESP scores of boys and girls was also significant. In these tests, a lady teacher acted as the agent. However, when the experimenter herself participated as the agent, the boys did better than girls. White and Angstadt (1226) also reported that girls did better than boys, but they did not claim that their results suggest any sex difference since there were other uncontrolled variables which might have contributed to the difference. Freeman (258) found in an experiment that averages of boys were above chance while the average score of the girls was much below chance. This difference, he suggested, may have been due to the lady teacher's particular affection for the boys. In some of Rao's (801, 803) language ESP tests, boys and girls reacted differently to the English and Telugu targets rather consistently. The boys tended to score higher on Telugu targets, while the girls seemed to do better with English targets. However, no such sex differences were found in the

language ESP experiments of Kanthamani (484). White and Angstadt (1226) found that boys did better when a girl was the agent, whereas girls did better when a boy was the agent. All these findings show that neither sex has a monopoly on psi. Although sex may in some cases determine the way a subject reacts, the reaction itself seems to be basically psychological.

The fact that such factors as health, age, and sex do not seem to have any direct relationship to psi should not lead one to overlook these variables. A careless confounding of them often leads to the acceptance of a null hypothesis that should have been rejected. Therefore, it would seem methodologically prudent to keep these variables constant in a given series unless there is good reason to believe they are totally irrelevant.

The Effect of Drugs

The use of drugs to facilitate ecstatic and mystical experiences is recorded in several cultures. The belief that paranormal experiences can be obtained by taking drugs and herbs is still current in many parts of the world. While parapsychologists still have not laid their hands on the magic mushroom or a fantastic drug that will give the sensebound man a spell of omniscience, there has been no lack of attempts to find evidence of the influence of drugs on psi. These attempts range all the way from experimenting with alcohol and caffeine to the latest of the psychedelic drugs.

Brugmans (75) found that relatively small doses of alcohol (30 grams) appeared to increase the scoring level of his subject. Warcollier (1065) also noticed that his subjects scored more successfully after taking moderate doses of alcohol. But Averill and Rhine (19) reported a great drop in the subject's scoring level after he took alcohol. It would appear, therefore, that alcohol may affect psi in both ways. But we cannot be sure that this effect is not more psychological than physiological. The subjects were aware of drinking alcohol, and their subjective notions regarding its possible effects might have influenced their scores.

Rhine reported that caffeine helped to raise the scoring level of his subjects when they were scoring below their usual level (835). He also reported that the influence of sodium amytal appeared to destroy all ESP ability. Linzmayer, who was averag-

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that will enhance the manifestation of psi. In a general way, Vaulsley's (1978) experiments using a kymograph to indicate the onset of hypnotic trance in his subjects come under the first category where a physiological response is used as an ESP response. More specifically, the onset of hypnosis was indicated by

More specifically, the experiments of Figar (215) indicate the use of physiological methods to obtain objective evidence for psi. In an exploratory study, Figar found that the simultaneous plethysmographic readings of the subject and the agent (made by means of two completely independent mechanical plethysmographic recorders while the agent was working mentally on multiplying two digit numbers) when alternated between irregular rest periods showed a remarkable number of similar deflections. If we assume that the spontaneous deflections are randomly distributed in time, that no subjective element entered into the interpretation of the plethysmographic readings, and that no external noises affected the subject and the agent at the same time, these results present striking evidence for ESP. It may be noted, however, that Figar himself was not willing to draw any conclusions on the basis of his experiments, which leave much to be desired in the way of systematic safeguards to eliminate any possible sensory cues.

Dean (146, 147, 149) repeated Figar's experiments with the plethysmograph. The agent in these GESP experiments looked at the randomly arranged target cards consisting of five names known to both the agent and the subject, five names known only to the subject, five known only to the agent, and five unknown to either. As the agent picked up and looked at these cards, one at a time at random time intervals, the plethysmographic recording of the subject, who was in another room, was taken throughout the testing session. Later, when the hypothetical responses of the subject to these names were measured at the appropriate intervals on the record, Dean found significant results in that part of the data in which when the stimuli presented to the agent were names known to both the agent and the subject and also when they were known only to the subject. Names known only to the agent and names unknown to both did not give any significant deviations. This con-

The subject reported no change in ESP scores during the study when he took 10 grains of sodium amytal. In another study by Rhine and his associates (1927), subjects worked slightly better when they drank a bottle of Coca-Cola, for the caffeine it contained, than when they did not have the drink. Clark and Sharp (1920) reported results which were much the same as those of Rhine—the scores improved with caffeine and dropped with amytal. While these results, unlike those with alcohol, are consistent, they do not establish any direct relation between a stimulant and high ESP score or a depressant and low or chance scores. In all these studies, either the subject, the experimenter, or both, knew the drug that was being given.

There are a few

There are a few published experimental studies of the effects of drugs on ESP scoring which were designed with controls to eliminate counterhypotheses. In one study, Cadoret (84) found that amytal and dexadrine exerted a definite effect on ESP performance, but he observed that the same drug produced two different effects in two different experimental situations. The stimulant drug dexadrine produced higher scoring in picture tests but lower scoring in card tests, again suggesting a psychological interpretation.

Woodruff (1239) found no significant effects in his study with various drugs. Huby and Wilson (356) also failed to get any statistically significant results in their two drug experiments. There was some discussion of the possibility of a

There was some discussion of psilocybin, LSD 25, and mescaline; but no systematic experimental studies were carried out to test whether these drugs affect psi. One possible exception, perhaps, is the study by Cavanna and Servadio (104). Their report of a pilot study with four subjects, which includes extensive personality evaluations of the subjects, deals mainly with the methodological problems in ESP and drug research, but adds little to our knowledge of the possible effects of LSD 25 and psilocybin on the manifestation of psi. Thus, the use of drugs to create specific states of mind that would facilitate ESP occurrence remains an attractive but as yet unrealized possibility.

Physiological Aspects of Subject's Response

The physiological researches in parapsychology have, broadly

firmation of his expectations convinced Dean that physiological methods could be used to investigate psi and that because of their objectivity they might have a certain advantage over the regular guessing tests.

In another pilot study, Dean (148) sought to influence the dreams of his two subjects by looking in random order at either a blank picture or a picture with horizontal composition when his EEG (electroencephalogram) readings indicated that the subject was dreaming. His instruments recorded the vertical and horizontal eye movements. Dean found significantly more horizontal eye movements when he (the agent) was looking at the pictures than when he was looking at the blanks.

Tart (1106) took plethysmographic, as well as GSR (galvanic skin response) and EEG recordings, of his subjects while each of them sat alone in a sound-proof chamber trying to guess when the "subliminal stimuli," which were in fact ESP stimuli, were presented. An agent in another room was given electrical shocks (shock trials) at random intervals, or the shock was diverted to a resistor (nonshock trials). In either case, the electric shock was the stimulus to which the subject was expected to respond consciously by tapping a key when he had a hunch that the "subliminal stimulus" was presented. The key taps did not significantly correspond with the actual presentation of the ESP stimuli. However, the physiological responses of the subjects were found to be significantly related to the presentation of "shock" and "nonshock" stimuli. A faster and more complex EEG pattern, more frequent galvanic skin responses, and changes in finger pulse volume were recorded when the stimuli were presented than when they were not presented. This suggested to the experimenter that the subjects were unconsciously responding to the targets by showing a higher level of activation when the targets were present.

Attempts were also made to learn whether any physiological activity in the human organism is related to psi. But these attempts have not yet been successful. In two studies relating to ESP function and psychogalvanic response, Woodruff and Dale (1242) failed to obtain any significance. Otani (668) found some suggestive evidence that change of skin resistance might be related to ESP scoring. Correct guesses seemed to be associated with an in-

crease in GSR, suggesting that the subject may do better in ESP tests when he is more relaxed. But Tenny (1113) failed to find any significantly consistent relationship between GSR and plethysmographic measurements and ESP scores even though his overall results were significant. In fact, the relation of the GSR and plethysmographic responses to the ESP scores varied from a positive direction in session I to a negative direction in sessions II and III. Among others who did not find any consistent relationship between physiological measures and ESP are Cadoret (86), Wallwork (1185), Stanford (1073), and the Research Committee of the American Society for Psychical Research.

While we may be reasonably optimistic about the physiological registration of psi by means of instruments that detect mild subliminal stimulation and activity, there is little in these studies that would add to our hope of finding certain states of the body that are especially conducive to psi functioning. The failure of several of these investigators to isolate any factors on the basis of EEG, GSR, and plethysmographic recordings that are associated with psi should sound a note of caution for any over-optimistic expectations of finding a physiological basis for psi. At the same time, one cannot fail to appreciate the enormous value that accrues from the use of these instruments to register psi. The instruments have, on the one hand, made it possible for the extension of the range of the subject's detectable responses in psi tests. On the other hand, they have added further credence to the hypothesis that psi is often manifested below the threshold of conscious awareness and have implied the need for special techniques of identifying psi responses.

Relaxed and Hypnotic States

Are there any mental states that are associated with psi manifestation? Mrs. Sinclair (1039) observed that a relaxed state of mind was essential for success in her telepathic experiments. Referring to his experiments, Thouless (1139) noted that anxiety tends to militate against success whereas a relaxed state is conducive to success. The "relaxed and acceptant" group of maternity patients in the study of Gerber and Schneider (268) gave significant results while those classified as "not relaxed" and "not accept-

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ant" gave scores at, or below, mean chance expectation. In one of Rao's (791) experiments, his subject did two runs in each session in her normal state and followed them with two runs in the relaxed state created with the help of hypnotic suggestion. She obtained significantly more hits in the relaxed state than in the pre-relaxed period. Of course, we cannot draw any conclusions from these few observations until relaxation is more precisely defined. Relaxation, in a general sense, is an asset to many human abilities, and its use in the ESP situation is implied by various other observations that follow.

If manifest anxiety is any indication of tenseness as opposed to relaxation, there is some experimental evidence that low-anxious subjects are likely to obtain better ESP results than high-anxious subjects. Rao (792) found a significant negative correlation between Taylor's manifest anxiety scores of his subjects and their ESP scores, i.e., the less anxious the subject, the greater his ESP score. This finding, however, was not confirmed by Freeman and Nielsen (262) in their studies of anxiety and ESP. It is likely that anxiety may affect the subjects differently, depending on the nature of the task (simple or complex) and the personality characteristics of the subjects (introvert or extrovert, expansive or compressive, etc.). It would appear, therefore, that a triangular study involving the interactions of the ESP scores, physiological measurements such as EEG and GSR, and anxiety and personality ratings, may throw some light on this problem.

Hypnosis

Several of the earlier experiments were centered around the idea that there is perhaps some relation between the hypnotic state and the manifestation of psi. This may perhaps be due to a widespread study of mediumship during the end of the nineteenth century and the first two decades of the twentieth. Mediums usually go into an entranced state in which the unconscious presumably manifests itself as a secondary personality. A French physician, Azam (855), observed that one of his patients in a hypnotic state responded to an unspoken thought. Janet (705A) was reportedly successful in inducing a somnambulistic trance state sixteen out of twenty times by mental suggestion. Mrs. Sidgwick (855), experimenting with hypnotized subjects, using two-digit numbers and

colors as targets, obtained significant evidence for telepathy. Vasiliev (1178), the Russian physiologist and parapsychologist, recently reported his studies, made in the 1930's with hypnosis, and those of Platonov and Kotkov. Vasiliev was highly successful in inducing hypnotic trance in his subjects through mental suggestion under what seem to have been carefully controlled conditions. It may be noticed, however, that Vasiliev, like Janet, did not use hypnosis as an especially favorable state of mind for success in psi. Hypnosis was only an effect to be produced by telepathy.

There are a few other studies in which hypnosis was used to create a favorable state of mind for psi. Using ESP cards, Grela (302) tested eleven subjects in four sessions. One of them was without hypnosis and the other three were with hypnosis. In the three hypnotic sessions, positive, neutral, and negative suggestions were given one at a time. His subjects obtained a significant positive deviation in the sessions where positive hypnotic suggestion was given. They had their lowest scores when negative suggestion was given.

But Rhine (837) reported that his subjects who were scoring well above MCE before hypnosis dropped way below in the post-hypnotic test period. This was contrary to his suggestion. He concluded: "The important finding, and one that stands out fairly clearly, is that there *was* an effect. The hypnosis did something, even though in four out of six cases it was a reversal of the intended effect" (837, p. 138).

A similar result was also reported by Nash and Durkin (631) who gave two of their subjects 300 trials each with single digits as targets in the waking state and an equal number of trials under hypnosis with positive suggestion. The subjects obtained a positive deviation when they were working in the waking state and a negative deviation under hypnosis. There was a statistically significant difference between the scores of the two states.

More recently, Fahler (209) obtained significant positive results when his subjects were hypnotized. They scored only at the chance level during the waking state. Another experiment by Fahler and Cadoret (211), at Duke, gave similar results con-

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was no longer necessary.

One cannot be sure, then, whether the above studies really justify the conclusion that hypnosis has a direct influence on the subject's success other than the suggestive influence of the hypnotist and perhaps its value to bring forth psi in the initial stages. Rhine's results, which show a reversal of the intended effect, indicate that what is important in a hypnotic situation is how the subject reacts to it. Fahler himself admits "It is quite possible that I, as the experimenter, was more successful in increasing the subjects' motivation when they were hypnotized" (209, p. 184). In any of the experiments reported so far, full control situations to eliminate alternate hypothesis were not provided. The evidence thus far seems to indicate that while hypnosis may be used as a helpful device to elicit psi in certain situations, this effect may be limited to the raising of the subject's motivation. The magnitude of success achieved by Ryzl with J. K. and P. S. and P. S.'s continued success even in the presence of observers from other countries without the usual decline effects will undoubtedly give an impetus to the study of hypnosis in relation to ESP. If Ryzl is right in his hypothesis and if the subjects can be trained this way by other experimenters, his work will indeed be a long-awaited breakthrough in parapsychology.

Attitudes, Moods, and Personality Factors

The studies relating to any possible connections between ESP and natural mental states of the subjects fall into three main classes—those that are concerned with the attitudes and beliefs of the subjects, those that have to do with transient and "surface" states of mind and those that involve relatively stable traits of personality.

Attitude Studies

The best known of the attitude studies are those made by Schneider (1917). In a series of experiments she divided her subjects into two groups. Those who believed in the possibility of ESP were called "sheep," and those who rejected such a possibility were "goats." She found consistently that the sheep scored above mean chance expectation; while the goats scored below.

firming the former's findings in Finland.

Casler's work differs somewhat from Fahler's. Fahler used hypnosis as a state conducive to ESP manifestation; while Casler (191) went a step further and gave explicit suggestions for improvement in scoring. Both the preliminary and the main experiments involving a large group of subjects gave significant scores when the subjects worked under hypnotic suggestion. Casler thinks that "the induction of hypnosis, in essence, opens up potentialities of communication which may give the individual's psi capacities the opportunity to express themselves" (101, p. 86).

In another study where the subjects were given no suggestions, Casler (100) observed that scoring in the hypnotized runs was significantly higher than in the waking state. Hypothesizing that hypnosis might help accentuate ESP in both directions (positive and negative), Honorton (353) divided his subjects into predicted low-scorers and predicted high-scorers on the basis of a fourteen-item interest inventory. He found that the predicted low-scorers obtained negative deviation which was higher during the hypnotic condition than in the waking condition, and that there was a significant difference between the predicted high- and low-scorers in the hypnotic condition alone.

The work of Ryzl, in Czechoslovakia, has now opened up potentialities that go beyond some of the most optimistic expectations one might have had a few years ago. Ryzl (960) thinks that with the aid of hypnosis the subjects can be trained to produce psi ability under experimental conditions. Miss J. K., who had shown no psi abilities prior to her hypnotic training, gave fantastically high scores with the help of the training that she received from Ryzl. Ryzl also trained another outstanding subject, Pavel Stépének (P. S.), who did not show any psi ability before undergoing hypnotic training. An important feature of P. S.'s work is that once he was able to obtain highly significant scores in a state of self-induced hypnosis, he continued to do so even during waking states. He was able to produce significant results without hypnosis in the presence of visiting parapsychologists from other countries (963-967). It is interesting to note that hypnotic training proved very fruitful in the case of J. K. as well as P. S.; but for P. S., once he acquired the ability, hypnosis

When the results of all her experiments were pooled, sheep gave a highly significant positive deviation and goats, a significant negative deviation. The difference between sheep and goats was very highly significant.

Schmeidler's experiments were repeated with some procedural changes by several other investigators. Bevan (43) divided his subjects into "believers," "nonbelievers" and "indecisives." He found that the undecided scored best and the believers next. The nonbelievers, however, scored at chance level. The scores of the "indecisives" were independently significant.

Using categories similar to those of Bevan, Casper (103) found that sheep scored positively while the indecisives scored negatively. The negative scores of the indecisives were independently significant.

Van de Castle and White (1177) reported that in a test where the subjects were classified into sheep and goats by means of a sentence-completion test, the sheep scored above chance and goats below chance. Those who were rated as having conflict over the existence of ESP gave an average score which is between the other two. Adcock and Quartermain (6) failed to get any indication that sheep-goat attitudes are related to positive and negative scoring, even though the total results showed significant deviations. Among others who have studied the relationship of subject attitudes to ESP are Kahn (479), and Woodruff and Dale (1245), Osis and Dean (663).

The sheep-goat difference seems to be valid in the East as well as in the West. A recent study in an Indian University gave highly significant differences between sheep and goats. Employing a questionnaire consisting of twelve questions (six relating to the subject's paranormal experiences and six dealing with his attitudes), Bhadra (44) tested 152 subjects using ESP cards. The sheep and goats, separated on the basis of their attitudes, scored significantly different. While sheep scored positively, goats obtained fewer hits than expected by chance. Experimenting with grade-school children in Argentina, Musso (612) found that sheep obtained significantly more hits than goats.

While it is true, as Mangan (543) has pointed out, that the criteria for separating sheep from goats is somewhat different

for each of these investigators, there can be no doubt that the "sheep-goat" criterion has proved so far to be the most useful one for separating the high-scoring subjects from the low-scoring.

But what is less convincing is the rationale underlying this division. Belief or disbelief is not a stable feature of any individual. It says very little, if anything, about the personality of the subject, or even the mental state of the subject at the time of testing; for a skeptic, when better informed, may become a believer, and one may be a sheep or a goat for a variety of reasons. It is likely that the believer takes a somewhat different attitude toward the test from the nonbeliever. He is more likely to react favorably to the test and is less easily bored than the goat. Or, the attitude of belief or disbelief may be a subtle indicator of the subject's reaction (liking or disliking) to the experimenter. These factors or other similar variables may account for the sheep-goat differences in ESP.

The case of the undecided subjects suggests that what is important is not the attitude itself but the disposition toward the experiment which accompanies the attitude. While Bevan's undecided group scored significantly above chance, Casper's "indecisives" scored significantly negative and the group that had a conflicting attitude, as reported by Van de Castle and White, stood between the two extremes.

The results reported by Bevan and Casper are thus apparently contradictory. Therefore, there is reason to suspect that one or the other of the conclusions is fallacious. As Thouless has pointed out, neither of the two experimenters used the appropriate method of evaluation. In order to reach a generalizable conclusion that the indecises tend to score positively or negatively, one has to take the subject as the unit for evaluation. Both Bevan and Casper, unlike Van de Castle and White, took the trials and not the subjects as units. Since ESP scoring can be influenced by other variables, some of the subjects in these groups might have scored the way they did for reasons other than the fact that they were indecises.

The discovery of the significant and highly consistent relationship between subjects' attitudes towards ESP and their ESP performance has led parapsychologists to ask whether there

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is any relationship between the subject's general attitude towards life and his ESP ability. The Allport-Vernon Study of Values (AVSV) was used at least twice in ESP experiments to divide the high-scoring from the low-scoring subjects. Schneidler (995) found that the sheep who received higher rank on the theoretical scale of the AVSV tended to score positively and the goats who obtained similar ratings tended to give low scores. The difference between "theoretical sheep" and "theoretical goats" was statistically significant, while that of "nontheoretical sheep" and "nontheoretical goats" was not so. Nash (619) found indications of positive correlation between ESP scores of his subjects and their rankings on the religious scale. Here again the problem of a satisfactory rationale becomes a difficult one. If psi is like other human abilities, it is unlikely that it makes any difference whether one is theoretical or religious. These attitudes do not seem to be fundamental, but their accompanying psychological factors involving interest and motives may be relevant.

Transient Moods

Just as attitudes cause certain psychological sets that may in turn affect psi ability for better or worse, psi may also be facilitated or hindered by the moods of the subject. We all notice that there are times when we seem to do our best and other times when everything seems to go wrong. Are there any moods or transient mental states that we can recognize as related to psi?

Humphrey's (374, 374A) experiments to separate the high-scoring and the low-scoring subjects on the basis of the expansive-compressive ratings was an attempt to study ESP scores in relation to the subject's moods. Using the clairvoyant drawings obtained by Stuart, Humphrey found that the subjects rated as expansives on the basis of their relatively larger drawings gave above-chance results, while those rated as compressives on the basis of their relatively smaller drawings scored below chance. The difference between the two scores was statistically significant. In another study using GESP drawings, Humphrey (374A) obtained a significant difference between the expansives and compressives, but this time there was a reversal in the scoring direction. The compressives scored high, while the expansives gave

below-chance scores.

Smith and Humphrey (1045) also conducted tests with ESP cards using the expansive-compressive rating. The subjects who made expansive drawings scored slightly above MCE, and the compressives scored below. Smith and Humphrey, however, discovered from the drawings of the subjects that their subjects did not consistently draw expansive or compressive drawings. The same subject who drew a compressive drawing in one session could sometimes draw an expansive one in the next session. This made clear that the expansive-compressive rating was only a mood of the subject which could change from one part of the experiment to another.

In another experiment (1101) with clairvoyant drawings, involving individual and group testing, the expansives scored above chance and compressives scored below. McMahan (526) reported that her expansive subjects in a pure telepathy experiment scored fewer hits than the compressives.

Casper (103), West (1205), Kahn (479), and Nash and Richards (639) also used expansive-compressive ratings, but failed to get any significant differences.

The "expansive" person, it is said, is imaginative, expresses himself freely and shows potential ability to make contact with the surrounding world. The "compressive," on the other hand, shows compulsion, inhibition, and discomfort which could be judged by certain objective criteria shown by his drawings. But these are apparently not stable factors in the subject, since his compressive or expansive moods are subject to change within the same experiment. If the conflicting results between the clairvoyance and GESP tests are valid when the results are assessed on the basis of subjects as units (whether or not this was so cannot be deduced from the figures given in the reports), the effect of the moods seems to be determined largely by the way the subject reacted to the experimental situation.

In a precognition experiment, Nielsen (649) studied the relation of pleasant and unpleasant moods of her subjects to their precognition scores. When the subjects rated themselves in all three items as in either a pleasant or unpleasant mood, they scored significantly above chance. When their ratings showed

a "divided reaction," the scores tended to approximate chance. Commenting on the possible reason for this, Nielsen says, "It appears that when a subject felt strongly enough about his mental state to mark all three divisions of the scale 'pleasant' or 'unpleasant,' an intensity of motivation or readiness for vigorous reaction resulted which appeared to accompany the functioning of ESP" (649, p. 108).

Stuart (1093) gave an interest inventory to twenty-four subjects to see whether the interest ratings were related to the subject's ESP performance. On the basis of their scores in a five-point scale of a sixty-item interest inventory, he divided his subjects into "affectable" and "unaffectable" groups. By affectability Stuart meant the extent of the subject's general liking and disliking as expressed in his interest test. On direct hits, the unaffectable group scored above MCE, while the affectable group scored below MCE. On "displaced" hits the affectable group had scores that were significantly positive, and the unaffectable group were slightly below chance.

In another study, Humphrey (365) reported that the "mid-range" (unaffectable) subjects averaged above MCE and the "extreme" (affectable) scored below chance.

By analyzing each of the sixty items in the Stuart inventory, in relation to the subjects' ESP scores, Humphrey (369) found that fourteen of the sixty items were most useful in separating the high-scoring from the low-scoring subjects. Applying this new criterion, she divided her subjects in thirteen series of card experiments into two groups and found that the predicted high-scoring group (those subjects whose interest score was eight or higher) did score well, while the predicted negative group gave a negative deviation. The difference between the two groups was statistically significant.

Casper (103) also used Stuart's inventory but found no relationship between ESP and the range of subjects' interests.

Humphrey (359) combined the expansive-compressive ratings with the mid-range extreme measures on the Stuart interest inventory and reported that the mid-range expansives scored better than the extreme compressives and that the difference between the two groups was greater than in the previous studies

in which only one personality measure was used.

To the extent that they were able to separate the high- and low-scoring subjects, the interest rating studies were useful. But this use seems to be limited, not only because of the lack of widespread confirmation by other experimenters, but also because in these researches as in several other personality studies, the characteristics of affectability or unaffectability do not seem to bear any direct relation to psi. They may themselves be a part of a larger complex or may cause certain other psychological factors which are in fact related to psi.

However, the study of ESP in relation to moods has a methodological advantage over other studies involving relatively more stable characteristics of personality. Since these moods like pleasant and unpleasant, like and dislike, and even expansive and compressive can be manipulated under experimental conditions, it may be possible to study the same individuals in relation to different moods. This would considerably reduce the complexities involved in controlling the many yet-undiscovered subject variables affecting psi. Such investigations that study the individual under various conditions seem to hold promising possibilities for future research.

Personality Traits

There are a number of other studies designed to discover ESP-personality relationships. Utilizing the Bernreuter Personality Inventory, Humphrey (368) classified her subjects as extraverted or introverted. She found in two series of experiments that extraverts scored above-chance expectation, while introverts obtained below-chance averages. The difference between the two groups in both experiments is statistically significant. Casper (102) repeated the test and obtained suggestive results in the same direction. Nash (627) found a negative correlation between social introversion as measured by the Minnesota Multiphasic Personality Inventory and his subjects' ESP scores.

Working with children, Shields (1033) found that "not withdrawn" children scored significantly in an ESP test. The difference in the scores of the withdrawn and not-withdrawn groups was also significant.

On the basis of her Earlham College research and three other series of tests conducted at Duke, Humphrey suggested that there might be "some small but positive relation between ESP ability and general intelligence" (358, p. 16). But, the data in a significant ESP experiment of Rivers (919) showed no relationship to the subjects' intelligence data. Nash and Richards (639) also found only a very small correlation between the IQ scores and the PK scores of their subjects. The Vasses (1180) reported, however, that the ESP scores of their subjects who had IQ's above 100 were better than those of the subjects whose IQ was less than 100. But Eason and Wysocki (174) found no difference in ESP scores and IQ scores of their subjects who were students in a large parochial high school, even though the overall ESP results were quite significant.

Pratt and Woodruff (761) found that the psychological factor of novelty plays an important part in the subject's psi performance. When subjects shifted from working with large symbols to small ones or vice versa, there was a substantial raise in their scoring level.

Scherer (985) reported that conditions favoring spontaneity are more likely to yield extra-chance scores than the less spontaneous conditions. Van de Castle (1173) also reported that a preliminary analysis of the Rorschach results of his subjects suggested a possible relationship between PK ability and spontaneity.

Eilbert and Schmeidler (189) divided their subjects into two groups on the basis of their work habits. Those rated as "ego-involved" scored below chance expectation, while the "task-oriented" ones gave positive scores. The difference between the two groups was statistically significant.

Nicol and Humphrey (646) noted that self-confidence may be a crucial factor for success in psi experiments. Subjects who were rated as highly self-confident on the basis of the Guilford-Martin Inventory tended to score positively, while those obtaining low ratings tended to obtain fewer successes.

In a study of Picture-Frustration ratings and ESP scores, Schmeidler (1006) found that extrapunitive group (who express overt aggression) who showed moderate annoyance at the ESP

task showed a negative correlation with the ESP scores. On the other hand, the impunitive group (who evaded aggression) who showed moderate annoyance at the ESP task gave a positive correlation. Schmeidler infers that "on the average, subjects who have friendlier attitudes to the ESP task are likely to have higher ESP scores than those who are more aggressive and are hostile to it" (1017, p. 93).

Shulman reported a significant difference between the ESP scores of manic-depressive depressed and involuntional melancholia groups. He suggested that "a clue to the reasons for the significant difference between these two groups as they scored in this study may be found in the difference in the degree of effective attention, external interest, inversion of 'thinking and feeling,' and negativistic reactions" (1037, p. 104).

Working with mental patients, Bates and Newton (26) obtained significant results. When the subjects were classified as cooperative, irritable, and apathetic, they found that cooperative subjects obtained the highest scores and irritable the lowest. In the high-aim results, the difference between the cooperative and irritable subjects was statistically significant.

The Rorschach test also found its way into the parapsychological studies. Schmeidler (995) made extensive studies using the Rorschach test in her search for ESP-personality correlates. In the studies involving 1,062 subjects, she rated her subjects as well-adjusted and poorly-adjusted and found that the well-adjusted sheep scored markedly higher than the well-adjusted goats. On the other hand, the difference between the poorly-adjusted sheep and the poorly-adjusted goats was not significant. She concludes that the sheep-goat tendency "will be more pronounced for subjects whose social adjustment is good than for those whose social adjustment is poor" (995, p. 68). Schmeidler also reports that the sheep-goat tendency is more revealing for subjects who do not show signs of marked inhibition or over-responsiveness.

Rasch (806) reported the use of Rorschach in the study of mediums who were found to be predominantly "lively, outgoing, reproductive and emotionally unstable personalities."

The relation of these relatively more stable personality

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characteristics to ESP, unlike moods, seems to be less sharply conflicting and more consistent. However, these studies provide little convincing rationale for a basis of understanding the nature of psi in its relation to human personality. Perhaps this is the wrong emphasis and one should not expect final answers from these weak relationships which are "too vague and complex" to lend themselves for easy theorizing. Furthermore, there is no intrinsic reason why personality differences should help or hinder psi if it is like other abilities such as perception or memory. The introvert presumably can see and remember as much as the extravert, although the kinds of things that he would like to see and remember may be different from those of an extravert.

Summary

Age, sex, and health, as physiological factors, do not seem to be relevant to psi. Nor is there any way to tell yet whether there is any physiological locus that may provide a neurological basis for the operation of psi. The influence of drugs seems to be varied and unpredictable since the same drug has sometimes produced opposite reactions. We are thus led to think that psi is more psychological than physiological, and that the physiological factors influence psi only to the extent that they may generate favorable or unfavorable psychological conditions. The spontaneity of children, or the "curiosity" of women may help produce states of mind especially conducive to psi. The distracting influence of illness or the boredom of old age may also give rise to unfavorable conditions. But the subjects who are not disturbed psychologically by the state of their health or driven by the idiosyncrasies of age and sex may do just as well.

The studies concerning the relation between certain mental states and psi may be classified on the basis of the results achieved into two categories—those that are found helpful in separating the high- and low-scoring subjects and those that seem to enhance the psi ability. The "sheep-goat" tests, introversion-extraversion ratings, etc., while successful in various degrees in separating the psi-hitters and psi-missers, did not distinguish those who showed psi from those who did not. By the same logic that underlies the mathematics of probability, one could say that the negative devia-

tions are as significant and indicative of psi as the positive deviations. The believer for some reason tends to direct his ability to get the correct target, while the nonbeliever is inclined to avoid calling the correct one. But the latter presumably has as much ESP as the former if his missing the target is as consistent as the other's hitting.

By and large, the studies in the second category were not as productive as in the first. The drug that would enhance psi functioning (either in the positive or negative direction) or the physiological state that would provide optimum conditions for psi occurrence are yet to be discovered. The previous studies, at least in the area of drugs, however, do suggest this possibility. One area which has more possibilities of creating a mental set well suited for psi occurrence than any other we know of presently seems to be hypnosis. Because of the proved use of hypnosis in studying the unconscious, because of the apparent similarity of the mental states under hypnosis to some of those described in the practices such as yoga that are traditionally credited with enhancing paranormal abilities, and because of the more than suggestive results already achieved in this area, any optimistic expectations of the possibilities for the eventual control of psi through hypnotic training cannot be regarded as unfounded.

The complementary nature of the results in these two categories is quite obvious. Since psi is manifested in the positive as well as negative directions (psi-hitting and psi-missing), we need for its understanding and control an insight not only into the factors that enhance the ability but also into those that guide its direction. For this reason, though small and exploratory, Honorton's (353) study, in which the subjects were first predicted to be positive and negative scorers on the basis of an interest inventory and then were hypnotically induced to enhance their psi ability without regard to direction, presents an idea which can be developed and pursued with profit.

The fact that the avoidance of targets on the part of the subjects has contributed as much significance to ESP results as hitting did makes it very essential to ask the question of why subjects miss the targets. Are there any defenses that we use to suppress psi? If there are such defenses, can they be correlated

the subject's motivation and of the adjustment he makes to the test situation.

Writing about seven different subjects who were reported to have obtained extraordinarily high scores, J. B. Rhine pointed out that in each of these cases exceptionally strong conative states were present, and concluded that "exceptionally strong drive is needed for the top-level performance" (865, p. 48). But, as Rhine recognizes, it would be naive to assume that mere drive alone would produce the desired result. Many a subject has failed because he badly wanted to show his ability. Several reportedly high-scoring subjects under informal conditions at home could not succeed when brought into the laboratory situation. The subject needs to make proper adjustment to the testing situation in addition to having a strong drive if he is to succeed.

We may now apply this general notion to the findings reviewed thus far to see what sense they make now. The believers generally tended to obtain positive deviations because they, as believers, were likely to have been motivated to obtain higher scores, and the nonbelievers tended to produce negative deviations because their motivation was likely to be in the negative direction. Just as some persons who have strong inhibitions and repressions about certain things tend to fail consistently to recall them, a person who is convinced of the impossibility of psi may develop analogous inhibitions that may cause consistent missing. Also, the theoretical-minded person is more likely to decide on an *a priori* basis whether psi is possible or not and for that reason, he is apt to be more susceptible to a favorable orientation or an unfavorable inhibitory tendency.

Let us take the case of the expansives and the compressives. Both groups scored positively when they were in "preferred" situations, and negatively in the reverse situations. It is probable that the expansives liked a situation which involved their participation in the things around them (for example, cards in clairvoyant guessing) because it was easier for them to "adjust" to such a situation than to one involving guessing the thoughts of another person. The compressives, however, may have preferred a situation involving aloofness or withdrawal from the things around them to nonobjective thoughts, and consequently may

with other defense mechanisms we know? The use of such devices as the Kragh Defense Mechanism Test (a beginning attempt was already made in the Parapsychology Laboratory at Duke University) (99) may help to detect some of the dynamics that underlie the negative side of psi.

Another research idea which has not yet been given a fair test is that we investigate an individual's psi ability under various affective states. These affective states (moods) can easily be created and even controlled. The like-dislike (word-feeling) tests of Freeman (261, 262) seem to hold promise along this line. But any controlled inquiry that would relate moods to ESP perhaps needs to be an individual test, possibly with more objective criteria to identify the affective states. A combination study involving physiological measurements, personality assessments, and test manipulation may be the next logical step.

Much of the research in the subject area thus far has been concerned with ESP, and relatively little work has been done with PK. Since personality differences do seem to be related to the way the subject reacts to an ESP task (e.g., expansives did better in clairvoyant tests and the compressives did better in GESP tests), we have no reason to believe that whatever relationships may have been found to exist between ESP and personality patterns would also hold good for PK. If ESP is cognitive and PK kinetic, the laws that govern their manifestation may be different. Consequently, the study of PK and personality patterns is still another line open for future research.

One important finding that emerges from the studies reviewed in this chapter is that the factors that govern the operation of psi are basically psychological. They also suggest that the subject in an ESP experiment has to blend a very delicate balance of certain psychological factors which so far seem to elude all efforts at measurement. The existence of these factors may be a fairly obvious deduction from the various studies reviewed above, but they are still vague conceptions whose precise nature and laws of operation are yet to be determined and defined. We may broadly speak of them as motivation and adjustment, although one may involve the other and each in turn may imply many others. Psi, as tested in a laboratory experiment, seems to be a function of

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have scored high on GESP and telepathy experiments and low on clairvoyance tests.

Schmeidler's studies with the Rorschach suggest that adjustment is an important factor. The well-adjusted sheep obtained better scores than the average sheep. Also, it is not the poorly-adjusted goats which gave the bulk of negative deviation but the well-adjusted goats.

The extravert-introvert differences in ESP scores may be due to the differences in the way they adjust to the test situation. Our tests, it would seem, are generally designed to favor an outgoing, sociable person rather than a contemplative, introverted person. Moreover, in a test situation which involves other people, the extravert is more likely to make quick adjustment than the introvert. The failure to be at home with the experimental situation may cause frustration and negative deviations.

It would seem, therefore, that religious values, the self-confidence of the subject, and the novelty of the test conditions, insofar as they are found to contribute to the success of the subject, may help to raise his motivation. Also, the spontaneous, the impulsive, the task-oriented, and the "not-withdrawn" subjects may be able to adjust better to the test situation than their counterparts. If this is true, the withdrawn, the extrapunitive, the ego-involved, the introvert, and the less-spontaneous subjects would also be able to score positively if tests which make it easier for them to adjust were designed and administered to them.

Now, who is a good subject for a psi test? The answer is that everyone may be, if only we know how to manipulate his motivation and provide conditions to which he can readily adjust. Motivation and adjustment involve—besides the subject—the experimenter, the targets, and other conditions used in the psi test procedures. And this leads us to the consideration of the other angles of the psi triangle.

Chapter 3

THE TARGET AND ITS RELATION TO THE SUBJECT

THE target in ESP tests is the object of a subject's response. Whether it is one at which the subject directs his ESP or one which causes his response is something which cannot be definitely answered, even though the former case seems to be more likely. The target can be a physical thing like a symbol on the ESP card or it may be the mental state of another person as in pure telepathy. In PK tests, the target is the object which the subject attempts to influence mentally. It is important to distinguish between "stimulus" as used in psychological literature and the ESP target. The latter does not seem to be one that arouses a response. For it is difficult to see how the target—especially the target in a precognitive situation which is by assumption nonexistent at that time—could arouse a response without involving a chain of causal events that are inferentially related. Therefore, it is likely that an ESP call is more like an *aim* at a target than a response to a stimulus. ESP call, then, is quite similar to a PK act to the extent that in both cases the initiative and the exercise of the ability rests with the subject.

The Range and Choice of Target Material

The range of target material used in ESP and PK tests is indeed extensive. In fact, the basis for the differentiation of the types of ESP, *viz.*, telepathy, clairvoyance, and precognition, is grounded on the unstated assumption that divergent types of targets call for distinctive modes of psi ability. But the understanding that psi does not seem to respond to external stimulation emanating from the target objects makes one wonder if the so-called *types* of ESP are anything more than the distinctive